Space Weather Forecast

Issued on Wednesday, 30 August 2023 at 13:03 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Slight chance of isolated Moderate-class flares (R1-R2 Blackouts). Weak coronal mass ejection arrival possible Day 1 (30 Aug) with slight chance of Minor Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with only minor Common class flares observed. There are currently up to seven sunspot regions on the visible disc. Two of these are relatively large and complex but largely inactive. A region was showing potential for growth in the southeast quadrant but it is now looking stable or even weakening, with spots slowly fading on its trailing edge. A new region is revealing new spots as it continues to rotate onto the disc however, it remains unnumbered. The other regions are small and simple.
No Earth-directed CMEs (Coronal Mass Ejections) were observed leaving the sun on available imagery over the last 24 hours.

Solar Wind / Geomagnetic Activity: Solar wind parameters were typical of a slow regime. The solar wind was slow-ambient, between 330-350km/s, and made of charged particles considered to be of a below average amount. The magnetic field associated with the solar wind was weak, with only small and erratic fluctuations of its important north-south component. The results of these aforementioned parameters was a Quiet (kp 0-2) geomagnetic activity.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: The current Low solar activity is expected to continue with a chance of an isolated Moderate flare. The most likely source for this activity probably from a region located in the southeast that produced the last moderate flare.

Solar Wind / Geomagnetic Activity: An incoming CME may give a glancing impact at Earth sometime on Day 1 (30 Aug), though this carries low confidence. There are no other Earth-directed CMEs currently forecast. Solar winds are at Slow levels with little probable change until the potential CME arrival. The next driver for solar winds looks to be a coronal hole fast wind enhancement which may bring an enhancement to slightly elevated levels into Day 3 (01 Sep). All things considered geomagnetic activity is most likely to remain Quiet. Should the CME materialise, activity may become Unsettled to Active with a slight chance of G1/Minor Storm intervals on Day 1 (30 August), with any effects easing into Day 2 (31 Aug) before potential coronal hole influence likely increases activity once again into Day 3 (01 Sep).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background levels, with just a slight chance of enhancement should any larger flares occur from the two larger sunspot regions on the visible disc.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	5	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.